Why use a roof deck vapor barrier

VAPORSTOP 298
PYRO-KURE 600

ROOF DECK VAPOR BARRIERS

Insulation and a vapor barrier should always be used when the roof deck surface temperature is below the dew point of the surrounding air. This will prevent moisture from condensing on the cold surface of the insulation, which would eventually cause dripping and damage.

Without a vapor barrier, the insulation will become saturated and can cause the built-up roof membrane to fail, a major cause of roofing failures.

Five steps to a vapor-proof roof

1. Eliminate excessive water vapor wherever possible.
This can be done by *preventing the escape* of moisture into the atmosphere (by using ground covers, enclosing sources of steam or water, etc.), and by *providing a sufficient venting capacity* to rid the building of excess moisture (in showers, kitchens, etc.).

2. Use a vapor barrier.
Select a vapor barrier that is both easy to apply and resistant to job-site abuse. Install on the warm side of the roof deck insulation.

Vaporstop 298 Roof Deck Vapor Barrier combines tough kraft paper, premium asphalt and glass reinforced fibers. It's approved for UL Construction #1 and #14 and FM Class #1 and #2 construction. Vaporstop 298 is usually applied with a solvent adhesive.

Pyro Kure 600 Roof Deck Vapor Barrier consists of two layers of heavy kraft, glass fiber reinforcing and a special flame extinguishing adhesive. It's approved for UL Construction #1 and FM Class #1 and #2 construction. Pyro Kure 600 can be applied with asphalt.

3. Keep critical surfaces warmer than the dew point temperature.
Provide sufficient insulation so that, with minimum outside temperatures and maximum indoor temperatures and humidities, the dew point line will fall above the vapor barrier.

4. Provide for vapor release on the cold side.
A limited amount of moisture will always be present within the insulation. The cyclic effects of temperature and barometric pressure changes, however, tend to accumulate moisture in closed areas – such as roof decks – unless these are vented towards the *cold* side.

5. Avoid forming moisture traps with double vapor barriers.
Be sure to provide venting at the edge of the roof, so that the entire roof can "breathe" under the influence of solar heat build-up.

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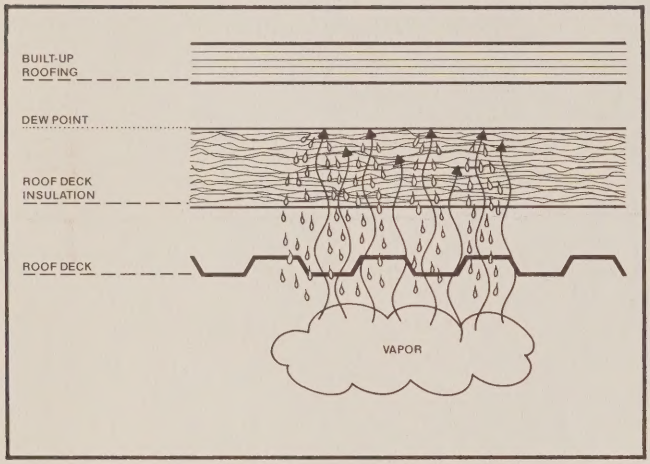
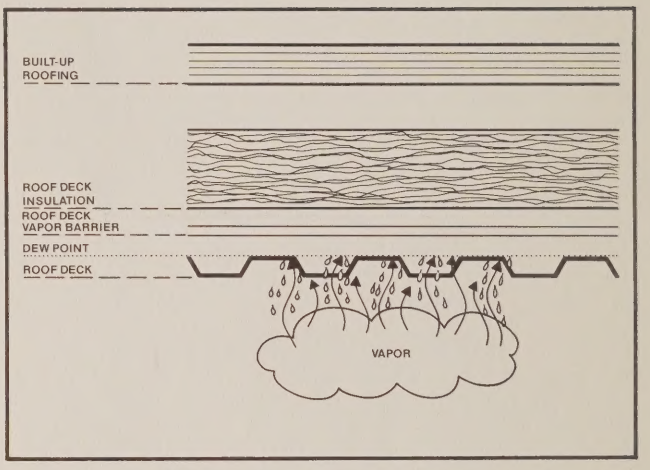
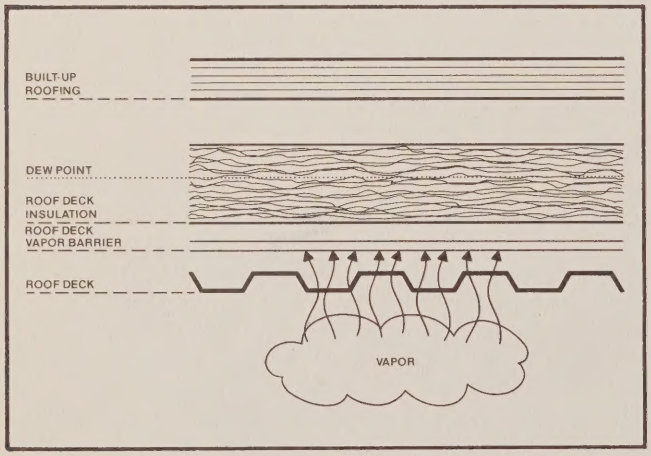
Here's why you need BOTH sufficient insulation AND a vapor barrier.



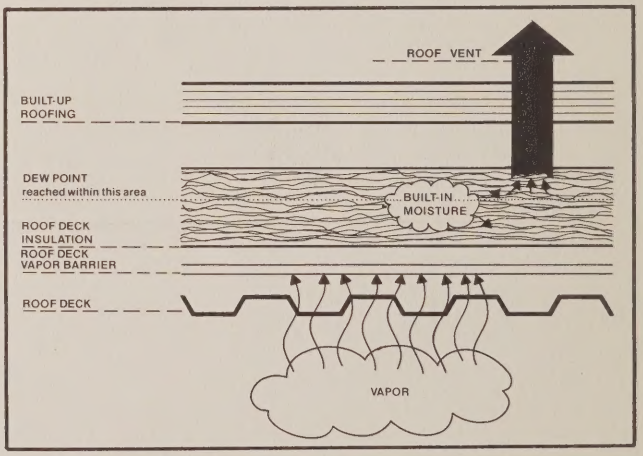
Without a vapor barrier . . . water vapor (a gas) penetrates roof deck, insulation and the underside of the built-in roofing. When it reaches its dew point, this vapor condenses into moisture (a liquid) saturating the insulation and roof deck causing drippage back into the structure.



Water vapor (a gas) cannot penetrate the vapor barrier, insulation remains dry. However, if the vapor barrier is cold due to insufficient insulation, the dew point will be reached below the barrier causing the vapor to condense into moisture (a liquid) resulting in the saturation of the deck and drippage back into the structure.



Water vapor (a gas) cannot penetrate the vapor barrier, insulation remains dry. If enough insulation is employed to keep vapor barrier warm (above the dew point temperature of air space below) no condensation will occur. There is no condensation (transition) of vapor (a gas) into moisture (a liquid).



Double vapor barriers are to be avoided. A roof vent can provide an exit for built-in moisture within the insulation. Built-in moisture can be due to various factors, one prime factor is job site abuse during construction.

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